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VII.—*Journey from Angora by Kaiṣaríyah, Malátiyah, and Gergen Kal'eh-sí, to Bír or Bírehjík.* By W. AINSWORTH, Esq., in charge of an Expedition to Kurdistán.

DURING the three winter months that the party remained in Angora, various excursions were made to hills immediately in the neighbourhood of the town, in order to obtain bearings for mapping the country; among others we visited the summit of Chal Tágh, 6 miles south of the city, whence we got a good bearing of Hasan Tágh, a remarkable peak rising 8000 feet above the sea, 18 miles S.S.E. of Ak-Seráï, and 120 miles from Angora.

A more distant excursion was made to the mines of Ishik Tágh, about 40 miles N. by E. of Angora, and lying 4560 feet above the sea; the route to which is laid down in the accompanying map.

On the afternoon of Tuesday, the 19th of March, our party, consisting of Mr. Russell, Mr. Rássam, and myself, accompanied by a khaváss báshí and two khavásses, sent by Záid Mohammed Páshá, as a guard through the Kurdish districts of Hái'máneh, quitted Angora, and travelling in a westerly direction, halted at Emír Yamán, a village of twenty-six houses, 4 hours from the city.

*March 20th.*—Passed a small lake which it took 25 minutes to ride round; beyond this we descended from a low undulating country into the valley of Murtah Ovah-sí, which we had explored higher up on our excursion to Ishik Tágh. The peculiarity of this fine and fertile valley is its being bounded to the W. by the prolongation of the hills of Ayásh, and being suddenly closed up at its southern extremity by hills of trachyte, amid which the Chár Sú and the river of Angora effect their junction, while in the pass is situate the small town of Istánós.\*

At the entrance of the same pass is a bridge, at which point the great Constantinople road and that to Istánós, only  $\frac{1}{2}$  an hour off, separate. In descending it, compact uniform trachytes are succeeded by trachytic conglomerates, near Istánós, broken up into peaks and pinnacles, and backed by steep cliffs of rude but picturesque appearance. The town contains about 400 houses, 50 of Mohammedans and 350 of Armenians; it occupies the right bank of the river, and, confined by the cliff, forms a long narrow street, which is well stoned up, like a quay, and adds to the general appearance of comfort and cleanliness.

A remarkable rock, almost insulated from the cliff, advances over the lower part of the town. It is crowned by ruins of former times, covered with storks' nests, and burrowed by cavernous passages

\* Vulgò Stánós.

difficult to reach. These caves measured, the first 9 feet by 7, the second 34 feet by 10, with an opening to the E.

Another series of caves, approached with some difficulty, stretched along the face of the cliff in three tiers. The first chamber was reached by a gallery on the face of the rock, 16 paces in length: from this another gallery ascended, partly in stairs, by the side of the rock 18 paces, where a little protection is given by a wooden railing. A long series of chambers were there entered, some having wells for water, and most of them fire-places. The whole extent was 145 paces; the chambers seven in number, the galleries four; but many of the chambers were again divided, as if for one or two families. There were no remains of antiquity discovered during this examination, and the caves appear to have been places of refuge from persecution, or a retreat for security or defence. In the burial-ground of the town there were some fragments of large columns and cornices hewn in trachyte, and one tombstone of white marble, with an illegible Greek inscription, probably brought from some other place.

The left bank of the river is occupied by gardens, and the new church, which does credit to the industrious Christians of the place, who toil chiefly in merinos and twist.

21st.—Mr. Russell and I rode out early in the morning, accompanied by a guide, to ascend the Góklú Tágh, the highest mountain in this part of the country; turning to the left, just above the junction of the Chár Sú and Angora river, we soon quitted the trachytes and gained a barren country of chalk-marl and greensand, here and there disrupted or traversed by dykes of trachytic rocks. The district was hilly, with the usual character of friable or marly formations, rather abrupt and shingly declivities and round-topped hills; on one of these, to our right, were some huge stones, which appeared as if once piled together with regularity. After 2 hours' ride, crossing a small rivulet with red water, we began our ascent, and soon reached the village of Góklú, of about 40 houses. Here we obtained another guide, and proceeded in our ascent, crossing several glaciers, amid a dense fall of snow, accompanied by a strong wind from the N. After about  $\frac{1}{2}$  an hour we reached a Yäilâ, or summer station, near which was a cave celebrated in all the adjacent country, being distinctly visible at a great distance, from its occurring in the face of a cliff which rises almost perpendicularly to the summit of the mountain. The cave, however, only presented us with a wide semi-circular opening in indurated limestone, which also contained large veins of calc-spar and some travertino. The cave was 50 yards in width, and 20 yards in depth; and had also lateral small caverns, and nearly vertical passages of no great interest. It was fronted by a wall of stone, which enclosed a kind

of platform for keeping sheep or cattle. As the snow continued to fall so densely, that we could with difficulty see a few yards before us, we gave up any further ascent (the chief object having been to obtain distant bearings), and returned the same evening, both wet and cold, to the hospitable Christians of Istánós.

22nd.—From Istánós we visited the junction of the Chár Szú and Angora river,\* which occurs amid cliffs of trachytes, about 200 feet in height; and from thence we continued in a south-westerly direction over hills of the same character as yesterday; passed Tatlar, now a ruined village, on the left bank of the river, Atá-jík, small villages beyond A'ná-Yúrt, also a poor village with small lake to the S. Beyond was Atá Tepeh (island hill), of volcanic origin of rather a singular conical form, which carrying tilted-up formations in a long line to the S., has caused a remarkable bend in the river, from whence its name: crossing the neck of the peninsula we again reached the banks of the river, backed here by the hills of Germesh, rising from 800 feet to 1000 feet above the plain, and a little farther on we came to the farm of the Kará Kóyunlí, or black-sheep tribe, consisting of about 20 houses enclosed in a square, like an Arab or Persian fort. The valley was bounded to the N. by the westerly prolongation of the Ayásh hills, composed of chalk, chalk-marls, and red and ochrous yellow sandstones, dipping N.W. at an angle of 25°, and preserving great regularity.

23rd.—We rode out early in the morning to visit the castle of Germesh. The river was forded with difficulty, although in summer it is said to be nearly absorbed by the surrounding friable soil. Our first visit was to the warm spring (84° of Fahr.), which issues from the declivity of the castle-hill. Over it there is a small bathing-house, with a circular dome, constructed of stones cemented by mortar, and apparently belonging to a remote Mohammedan era, although ascribed by the natives to the former possessors of the soil, under the usual designation of Genoese.

The ruins of a castle, apparently of Roman origin, occupy the summit of the same hill, which constitutes the most easterly point of the Germesh Tágh. This castle, now in a very ruinous condition, was built of stone, cemented by good mortar, and consisted of an interior portion, 58 feet in length by 30 in breadth, bounded to the N.W. by steep cliffs, 36 feet deep, and to the S.W. by a wall 19 feet deep. This more approachable side was, however, defended by an outer rampart, 50 feet from the interior, and having three round towers, one of which rises to the N. of the highest part of the fort.

The summit of the hill, about 700 feet high, consists of

\* Enkuri Szú, called at Angora Chibük chái (Pipe River).

hypersthene rock and basalt; the declivities exhibited trap, tufa, and conglomerates.

Returning to Kóyunlí, we joined the rest of the party, and proceeded over a level plain of river alluvium 4 miles, to the point where cliffs of chalk approach the river banks from the N., leaving a small and fertile plain, succeeded by Yókarí Turkhálí (Upper), a village in a chalk ravine, where the river is received among hills, and where there is also a wooden bridge. The hills soon become higher, with rounded summits, and rather steep declivities, being composed of indurated limestones in waved and contorted strata; and we entered a pass that presented some picturesque points of view. About 1 mile from the entrance is a copious hot spring, of very pure and clear water; and there are remains of an ancient road, that was in part hewn out of the rock. Beyond this a large cave is seen at an elevation of nearly 400 feet from the valley below, which contains the ruins of a building of strength, adapted for defence. This had been once the retreat of robbers, for whom the pass offers many advantages in the pursuit of their avocations. Near the exit of the valley the limestone reposes upon mica-schist and clay-schist, with quartz-rock. Beyond this is an open plain, in part cultivated, with the village of Ashaghí Turkhálí (Lower) to the right, bounded, to the N. and W., by a long range of uniform low hills of gypsum. The river, free from the rocky pass, now takes a more westerly direction; and we followed a middle route between it and the hills for about 4 miles to the village of Sarrubás, the residence of an A'yán, and where we were to obtain fresh horses.

24th.—We continued our journey along the same plain, with the river to our left, and gypsum hills to our right; the valley is about 5 miles in width, and bounded on the S. by the Germesh hills. After travelling from 5 to 6 miles the valley begins to narrow; and in the gypsum cliffs, as they approach the river, are numerous caves, used as folds for sheep of the Angora breed. There was then a sad mortality among these delicate animals; many were dying before our eyes, and the vultures were so gluttoned as to be too lazy to move.

Below is a bridge over the Angora river, by which a road is carried to Serví-Hisár,\* fording the Sakáriyah,  $\frac{1}{2}$  a mile further on. At this point both rivers enter wild and rocky passes in sienitic rocks, which here suddenly succeed to the gypsum; a narrow peninsula of the latter separates the two rivers, expanding as it extends upwards to the N. The Sakáriyah has a very tortuous course; and, after forming several small lakes, enters with its tributary into the sienites; after flowing through which, amidst falls and precipices, for about  $1\frac{1}{2}$  mile, the two rivers effect their

\* Vulgo Sevri Hisar.

junction, just before the igneous rocks are succeeded by an open plain, soon again shut up by other mountains.

By this excursion we determined that the site of Pessinus did not exist, as Col. Leake supposed, on the E. side of the Sangarius. Mr. Hamilton and M. Texier have, I believe, identified the ruins of Bálá-Bázár with that place; but some difficulties remain to be reconciled in the march of Manlius; and what is to be said of Plutarch's statement that Cato the younger *walked* in one day from Ancyra to Pessinus?

Our luggage, escorted by Mr. Rassám and two Khavás̄ses, had gone direct from Sarrubás to the village of Mislú, fording on their way the Angora river (Engúrí Sú). Having accomplished our exploration, we had thus in part to retrace our steps between the two rivers, over low undulating hills of gypsum, with some limestone and breccia deposits, and then across a wide plain, extending from the castle at the eastern end of the Germesh Tágh, to the village above mentioned, situated at its western end, a distance of about from 12 to 15 miles in a straight line. At the western extremity, trap rocks no longer occupy the whole mass of the hills, but only the summits, and repose upon cretaceous marl. There is one hill further W. than the village; beyond it is the vale of the Saķáriyah; and there are no other hills of importance intervening between this and the conical summits and serrated peaks of the Sevrí-Hisár mountains.

Mislú was once a flourishing village, probably on an antique site; but its walled-in gardens are now neglected, and its houses falling into ruins. About twenty only are still inhabited. The country is watered by many copious springs: partridges begin to abound, and ground-squirrels have made their appearance in numbers.

25th.—We ascended the pass in Germesh Tágh, S. by W., and entered upon a fertile valley, stretching from E. by N. to W. by S., and shut up at its eastern extremity by a ridge that unites the Germesh Tágh with the Sha'bán-úzí Tágh, of which bearings were taken from the Chál Tágh, near Angora. The latter is composed, like the former, of cretaceous rock and basanite. The Sha'bán-úzí has also sandstone on its southern declivity. Before us was a large village, also called Sha'bán-úzí. The rivulet of the valley is a tributary to the Saķáriyah.

The ascent of the hills of Sha'bán-úzí occupied us about 1 hour. From the summit we had an extensive prospect. The undulating district of Háiṁáneh, the valley of the Saķáriyah, the mountain of Ayásh, with the distant Elmáh, Idrís, and Sevrí-Hisár chains, formed the chief features. Descending the hills by the yáilá of the village of Yaghmúr Bábá (Father Rain), and passing

some small caves with hewn arches, we reached a fine cultivated plain, where we first entered the district of Häämáneh. Our road lay along continuous fertile lands, producing scarcely anything but wheat and barley, till we reached Karghah-lí (Jackdaw town), a large village, the seat of the Väivodah of the district, and having every appearance of much agricultural wealth.

26th.—The rich agricultural land around Karghah-lí does not extend far: we had not travelled an hour to-day when we found ourselves upon a high undulating upland of chalk, without wood or cultivation, and but few ligneous or vivaceous plants. The vegetation consisted of a few gramineæ and wormwood. The average elevation of this upland, from a number of observations, is 3000 feet. After travelling about 16 miles in a S. E. direction, we came to a valley with a rivulet, divided into two parts by a range of hills, through which the waters find their way by a narrow and precipitous pass of compact limestone. The lower and more northern valley contains two or three villages, the largest of which is called Ujúk, and was generally cultivated. The southern valley contained the Turkomán village of Alif, with tents and about twenty houses, but not everywhere cultivated. At this village we found numerous tombs, columns, cornices, and other fragments, evidently of Byzantine origin, and apparently indicating an ancient site.

From hence our road lay up the same valley till we turned to the E. to Kádí Kóí (Judge-ville), formerly the seat of government of the whole district of Häämáneh. At present it contains about forty houses, built upon the declivities of some barren hills of compact non-fossiliferous chalk, with hard friable limestone, dipping 15° N.

27th.—Having sent our luggage to the village of Júluk, Mr. Russell and I started to visit some warm springs in the neighbourhood, where some remnants of antiquity were said to be. We reached them in about three quarters of an hour, and found, as indicated, a large hot spring, presenting the peculiarity of issuing from the top of a round or flat-topped hill, about 300 feet above the adjacent valley. This spring is inclosed in a showy modern building, with the usual dome-roofs, divided into two parts, 32 feet square; one for men, the other for women. The roof of that intended for the men has fallen in, the place being totally neglected and abandoned. The supply of water is considerable; its temperature is 41.5 Cent. (125° Fahr.), the air being 58° Fahr. The baths are inclosed in a space that is surrounded by a wall, 400 yards long by 300 in width. It was also formerly defended by bastions, now in a very ruinous condition. Within this inclosure there is a modern jámi', or mosque, also going to ruin,

constructed chiefly with the stones of a Greek temple; there are also many ruined modern houses, and a burial-ground, with Byzantine tombstones, cornices, pillars, &c., but we found no inscriptions. By the side of this inclosed space there appeared also to have been formerly gardens and respectable houses; but now all is deserted, and not a being was to be seen around.

Our route from the baths passed up a narrow valley, where a few composite plants first appeared in flower, amid limestone shales tilted up at a high angle. From thence we commenced the ascent of Ardij Tágh (Mount Juniper), not however, much covered by shrubs of any kind, and composed of sandstone and limestone shales. The crest is elevated about 600 feet above the plain of Häimáneh; 900 feet above the valley below; and 3592 feet above the level of the sea.

An hour's descent brought us to the Turkomán village of Kizil Kóï, where we obtained, after some demur, a change of horses, and proceeded rapidly with these up a long valley, and over naked uplands, to the mountain of Gókcheh Bunár (Heaven-gate Spring), at the foot of which were tents of Kurds, newly arrived in these districts. Passing round, we reached the village of Kizil-jah Kal'eh (Red-dish Castle), where we were disappointed in not finding the castle which we had expected from its name and from report. It is merely one of the stone-forts so common throughout Lesser Asia. The mountain of Karájah Tágh was, however, now only a few miles from us; but as night was approaching, and we had still a long way to return to join our luggage, and as the plague also, which had been stated to exist at Kádi Kóï, and in various parts of the country, was again said to be very bad, in order to prevent our stopping at Kizil-jah Kal'eh, we were obliged to yield to the Khavásses and Súrujís, and turn back upon Chaltis, a large village, where we did see a few people sick: we then crossed a hill, and arrived late at Júlúk, a post-station on the road from Angora to Kóniyah, situated in a glen of trachytes. From the hill above Júlúk we had obtained some valuable bearings, by which, in the absence of astronomical observations, prevented at this season of the year by continually cloudy weather, we were enabled to connect Karájah Tágh with Chál Tágh, and Hoseïn Kází, near Angora, also with the Ayásh mountain, and then again with Shat-Músá and the Ardij Tágh.

28th.—Issuing out of the glen we traversed a plain towards some limestone hills, and, leaving the baggage to pursue its way to Kará Gedik,\* we approached the foot of these to visit some sepulchral or monastic grottoes of little interest: crossing the hills we came upon Kúrkli, a Kurd village, with more grottoes of a similar

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\* Properly Gedük, *i. e.*, Rent, Fissure.

character, and, proceeding along at a good pace, soon reached a narrow glen, composed on one side of indurated chalk, on the other of trachytic conglomerates. On the side of the cretaceous rocks are several large caves, arranged in tiers. The lower story contains a few large chambers, one of which is supported by square pillars, and has sepulchral recesses. Above is a long central chamber, 19 yards deep, with an arch in the centre, to the right what has apparently been the chapel, 7 yards long by 5 yards in width; while to the left a long gallery leads to a small chamber. This excavated monastery is in the same style, but not so complete as those actually existing at Deïri Za'ferán, near Márdín.

From hence, descending the trachytic hill of Kará Gedík, we joined our baggage at the village of the same name, and proceeded in a north-easterly direction 3 hours, over plains of monotonous outline, similar in structure and vegetation, till we gained Banam, a large village at the southern foot of Elmá Tágh, and between that chain and another of different composition and appearance, called U'rá Tágh.

29th.—The range of U'rá Tágh, which stretches from S. W. to N.E., south of Elmá Tágh, is composed of a central nucleus of serpentine and steaschist. These rocks are traversed by dykes of quartz rock, with abundant chalcedony, and have also tilted-up limestone, apparently of the chalk formation. On the northern side there is another association of rocks, consisting of basanites, associated with hornstone, flinty slate, and red quartzites. There is a large deposit of gypsum on the southern declivity. The barometer on the crest of the U'rá Tágh indicated an elevation of 4630 feet, or 861 feet above the plain of Angora.

In these mountains there have been several shafts sunk in search of copper; and furnaces formerly existed at Karghah-lí, which we had been particularly requested by Zaïd Mohammed, Páshá of Angora, to visit and examine. We found only small, although numerous, veins of pyrites, which were not promising. The deserted galleries of the mines had become the retreat of foxes, which were much discomposed by our intrusion. The southern slope of the U'rá Tágh is covered with fir, which tree is rare on the northern side. Snow was also abundant on the southern side, especially where protected by low oak woods. We spent the night at Karghah-lí, a village of about forty houses, with abandoned gardens, and a fine spring issuing from the gypsum rock.

30th.—An extensive tract of low undulating country, almost like a plain, extends between the U'rá Tágh and the Kúrah Tágh, to the S.E. The fall of waters is towards the Kízil Irmák; and the country becomes more hilly in the neighbour-

hood of that river. This district is called Tabánlí: the plains abound with the large field-partridge and with small bustards. In about the middle of it there is a small stream, called from a neighbouring village Tól. It is only 3 yards wide by one deep, but loses itself in marshes and small lakes before it joins the Kizil Irmák. On arriving at Kúrah Tágh we met with our old friends the saliferous red sandstones, which exhibited themselves chiefly as a coarse grit, upon which were superimposed gypsum, marl, and fresh-water limestones. This was on the outskirts; the central ridge is composed of red and brown sandstones, and sandstone conglomerate; and above, yellow marl and gypsum. During the passage of this chain, we were overtaken by a sharp storm, amid which we had yet to travel several hours. We descended to a small village, and entering a gorge in red sandstone, passed two beds of pink and white limestones, adapted for quarrying, and succeeded by dark-brown sandstone. We thence travelled along another cultivated vale, ascended over a hill-side, and made a rapid descent, in limestone gravel hills, to the large village of Kará-jíler, containing about 300 houses, all inhabited by Mohammedans.

31st.—About 2 miles from Kará-jíler is the celebrated bridge of Cheshní [Cháshnígír\*]. It occurs at a remarkable spot, where the river leaves an open valley, in red saliferous sand and sandstone, to enter a bold rocky pass in sienite, which is scarcely more than 1 mile in length. The bridge, said to have been erected by Sultán Murád, is built of red sandstone. It has one large and four lesser arches, at the water's ordinary level, one high up on a rock in the centre of the bridge, and some others still smaller on the level of the water. The width of the river there is 31 yards. The bridge at the highest point is 12 yards above the ordinary level of the water. To the eastward of the bridge is a large village called Kapú Kój (Bridge-ville). The jurisdiction of Izzet, Páshá of Angora, terminates here, so our Khvásses took their departure. The country we were now about to enter upon, belongs to the mines called Denek Ma'den, for which, after changing horses, we immediately started.

Our road lay in a N.E. direction, over a rude but not unpicturesque sienitic mountain, called Begrek Tághí. Below the river pass, we observed two small islands, a house, and ford. On these hills vegetation was forward; the dwarf almond-trees being about to blossom: on the summit we observed graphic granite and a dyke of basalt in sienite. Descending from Begrek Tághí we entered upon a remarkable granitic district, low with rounded whitish hills, but deep rocky ravines, with rivulets, and a gene-

\* "The King's Taster," in honour of whom, the bridge was named.—Jehán Numá, p. 626.—F. S.

rally scanty vegetation. This district is inhabited by the Jeríd tribe of Turkománs ; and in one of the valleys we passed Gotovah, one of their stationary villages, with sixteen houses ; beyond it Hájí-'Alí, and the Hasanlú Bábá-Sú, with fifteen houses. The country suddenly changed, after a rather long, but not unpleasant ride, when we reached the end of the granitic rocks, there being a fine cultivated plain, called Chápat Ovah-sí. Beyond this we came to a hilly country of indurated limestone, in the midst of which, rising gradually to the heights of Denek, is the village of Denek Ma'den, where are the furnaces and the residence of the director of the mines. We had continued rain all the latter part of the journey.

The ores turned to account at Denek Ma'den are simply galena, more or less argentiferous. The mines in the neighbourhood of the village are now unproductive, the chief vein being at 2 hours' distance. The present produce of the mines, when in full work, is said to be equal to 1000 okes,\* of  $2\frac{3}{4}$  lbs. each, weekly ; which quantity yields  $2\frac{1}{2}$  okes of silver. The village near the mines is in better order than most of those establishments ; the charcoal is kept in a large wooden enclosure, a handsome fountain pours its waters into a small basin surrounded by trees. The Greek miners have a small church ; the Mohammedans have also their mosque, but without a minaret. There were fourteen roasting furnaces, two smelting furnaces, and one open one, for the oxidation of lead and the reduction of silver. The mines have a large jurisdiction, including seven Kazálikṣ,† from which men and fuel are obtained ; and the produce of the taxes is also devoted to the maintenance of the same works. It would have been hard, under these circumstances, if they had not been made to return something to the government ; but so jealous are the 'Osmánlis of their mines, that the Ma'den Aghá-sí had been removed, after three years' residence, only a few days before our arrival. The mines were formerly under the immediate superintendence of the government at Constantinople ; but it was said that Záid Páshá was about to take the responsibility of them upon himself. Our reception at the mines was anything but civil, although we recognised personally some of the miners ; on the contrary, much anxiety and jealousy was shown, so it was thought better to continue our journey next day, although I had intended to make some mineralogical researches. The elevation of Denek Ma'den above the sea, by our barometer, is 3340 ft.

*April 1st.*—Our road descended in a southerly direction along the valley of the Denek rivulet,  $4\frac{1}{2}$  miles, when we reached the

\* Vulgo, Okah, for Wakíyah, from the Greek and Latin *uncia*.—F.S.

† Or Kádılıks, whence the modern Greek *Kατιλίκη*.—F.S.

village of Jinál O'ghlú, belonging to the Jeríd Turkománs, whose tents we also met with in the recesses of the hills further on, where the valley expands considerably. At 7 miles from Jinál O'ghlú, the Denek rivulet falls into a stream flowing N. 50 E., from the conical mountain called Chelebí to the S.W., to join the river of Yúz-Kát.

Near this point was the small village of Merdán 'Alí, from which we travelled over a hilly uncultivated district, descended to find another tributary of the Yúz-Kát river flowing from a small lake, and then along a gravelly plain to the foot of granitic hills, where is the village of Ahmed, or Hamíd, of fifty houses, inhabited chiefly by Turkománs. Its elevation is 2700 ft.

*2nd.*—We could not get the necessary quantity of horses from our Turkomán friends, so a part of the baggage was put into 'arabahs, or carts, drawn by oxen, which proceeded slowly up Mount Kará Góz (Black Eye) while we made a lateral excursion up one of the culminating points, to examine an old castle, but found only the remnant of walls, now divided into cells for sheep and goats. The labour of the ascent was amply repaid, however, by a good round of compass bearings. Its elevation is 4180 ft.; and the fort commanded the chain of Elmá Tágh, Idrís Tágh, over Kal'ehjik and the Báránlí chain.

At the southern foot of Kará Góz is the village of 'Isá Kójah-lí, from whence we proceeded, still in a southerly direction, over a fine fertile plain, to Sogher,\* a small village where we were to obtain horses. This plain is bounded to the S. by the Kárván-seráí Tagh, with its castellated summits; to the W. by the lofty snow-clad and wooded range of Báránlí, terminating to the N.W. in serrated ridges, evidently sienitic; to the N., by the Kará Góz, and to the E. by the remarkable mountain designated as Bóz-úk. The plain of Sogher is at an elevation of 3320 ft., and has all the characters of a true alpine plain; marshy, with a vegetation of rushes and hedge-grapes, and no shrubs or flowering plants of a warm climate. We had a sharp frost at night.

*3rd.*—Crossed the plain to visit Tásh Kaşmáh: large quarries of marble, opened in ancient times, but now not in use, at the foot of the Báránlí chain. This mountain-range, rising upwards of 2000 ft. above the valley of the Kızıl Irmáklı, is composed of a nucleus of granite, sienite, gneiss and mica-schist, tilting up limestone and some sandstone. The granitic rocks predominate in the W. and N.W.; limestones in the central portions, where, in consequence, the outline of the mountain is now rounded. The rocky cones and castle-bearing pinnacles near Jemálah are composed of granites and gneiss. Mica-schists predominate in the

\* Properly Sighir *i.e.*, Buffalo

easterly and south-easterly portions. The limestone at Tâsh Kaşmah is non-fossiliferous, rather coarse-grained, but of a pure white colour. At the eastern end of the plain, the valley of the Kír-Shehr river opened before us; but we turned to the westward, to the village of Jemálah, of sixty houses; above which, upon a rocky hill, are the ruins of an old castle. This building proved to be an edifice of various ages, formerly constructed of large hewn stones of granite and gneiss, repaired and modified by the Mohammedans in former ages, and in a still more slovenly manner in modern times.

A pile of stones, which is said also to mark the site of a castle, called Gechí Kal'eh (She-goat Castle), occupies the summit of the mountains at the opposite side of the entrance of the valley of Kír-Shehr. At 4 or 5 miles down this valley is the village of Kiziljah Kój, where the beautiful and renowned gardens of the once flourishing town of Kír-Shehr commence, and extend not only to the town itself, a distance of 5 miles, but also far beyond, much exceeding all published reports. The rivulet of Kír-Shehr is called the Kalichí-sú and is not the Kónák, by some considered as the Cappadox of Pliny.

Kír-Shehr is a sad example of a town ruined by religious fanaticism. It never was very populous or rich, but, with gardens of unbounded fertility, possessed most of the necessaries, and many of the luxuries, of life. These tranquil comforts brought around it, however, dervishes of many orders, to whom religious zeal bequeathed various edifices which, like villages, are, to the number of seven, distributed round the town—the resources of which they have drained and exhausted to the very last: what houses still remain are mud hovels of the lowest description; the only j'ami' is ruinous, and its minaret broken in half: 3 kháns are abandoned; the bezestein, which is a goodly building, is untenanted. There are six mesjids; and the population is stated to be from 3500 to 4000. There is only one Christian resident, who is employed in the manufacture of gunpowder.

The mountains N.E. of Kír-Shehr are called Khirkah Tágh, and are said to conceal a rock-fort, called Sefá Kal'eh. At a short distance from the town is a hot spring, amid some rocks of travertino, which have apparently owed their existence to hot water containing lime, iron, and other earthy matters in solution. The aspect of these rocks is very various; waved and contorted, with huge nodules of argillaceous ironstone. The spring is protected by a wall, and its water falls into a small bath. The temperature was 36° Cent., or 113° Fahr., the air being at the time 53° Fahr. The weather was clouded and rainy, and allowed of no observations at Kír-Shehr, although it is a point which we were very anxious to fix astronomically.

5th.—The ruins of U'ch Ayák (Three Legs), to which our attention had been directed by Mr. W. I. Hamilton, as existing between Kír-Shehr and Neú-Shehr, we ascertained to have been passed already in our journey, and that when at Jemálah we had left them 2 hours to our left. Mr. Russell and I accordingly, this morning retraced our steps along the Kalichí-sú as far as the bridge of Jemálah, and continued thence N. 5. E. to Juhún, for which place we had a letter from the Mutesellim of Kír-Shehr, to procure us a guide. Passing over the south-eastern slope of Bóz-úk (the Bóz Tágh of Mr. Hamilton's informant), we gained in an hour's time the crest, from whence we saw an extensive plain stretching before us, in part cultivated, with here and there the encampments of Turkománs; and only bounded by the hills of saliferous red sandstone. In this plain, and immediately below us, was a ruinous and rather lofty structure, isolated at the foot of the hills, without any adjacent building or ruin.

Upon closer examination this ruin was found to be built of baked tiles, with a deep mortar bond, and to belong probably, to the Byzantine era. It appears to have been a monastery or church of the Byzantine Greeks; and was perhaps used in more modern times: but the dome has fallen in, leaving the cross arches to stand forth in nakedness; whence the present name of the ruin. There is a small spring and a collection of recent Mohammedan tombs in the neighbourhood. Bóz-úk Tágh is a granitic mountain, not so lofty as Báránlí, and consisting of nearly one isolated mount, with a stone fort upon its summit. All the country around appears to have been once in a state of defence; six castles are to be counted on the hills around the plain of Sogher. The neighbouring hills are composed of granite, gneiss, and mica-schist, supporting cretaceous limestone and red sandstone. The last elevation of the Báránlí, the Bóz-úk, and the Kárvánseráï chains of hills, was posterior to the deposition of the supra-cretaceous red sandstone.

We returned to Kír-Shehr in the evening; the Hasan Tágh, with its bold and sharp, although not conical, but rather bicapitated summit, reflecting the gleams of the setting sun from its perpetual snows, was an object of constant attraction during the ride. Kír-Shehr appears to be at an elevation of 3095 ft. above the sea: and the adjacent plains may be considered as forming part of the great central plateau of Asia Minor.

6th.—Our route lay S.E. by S. over an undulating grassy country, at the foot of the Kárvánseráï hills, the soil being composed of gravel, quartz, and primary schist; 3 miles from Kír-Shehr is a nearly circular mound of earth, 40 ft. high, sur-

rounded by the ruins of a wall 224 paces in circumference, with the remains of six lateral towers. In the same neighbourhood there is a spring, of which the water expands into a weed-clad basin. This remnant of an ancient fort, or guard-house, is called *Göl Hisâr* (Lake Castle). Passing Emîrlar village of twenty houses, near the right bank of the *Kızıl Irmâk*, here flowing through red sand and sandstone, we arrived at Mújûr, the ancient *Mocissus* (?).

Having about 600 houses, Mújûr is distinguished as a *kaşabah*, or market town, the intermediate between a city, (Shehr,) and a village, *Köi*,\*—a word that is variously pronounced in different parts of this country. Mújûr is built upon a calcareous freestone, easily wrought and quarried. Caves and subterranean dwellings begin to make their appearance here. There are many gardens in the neighbourhood; and a little higher up the valley, is a mound, the probable site of the castle of *Mocissus*. In other respects, remnants of antiquity are rare. The first time for many a day, the weather began to clear up, probably from our getting more southward; and we obtained a meridian altitude of the sun, giving for the latitude of Mújûr  $39^{\circ} 5' 40''$  N.; its elevation being 3140 feet.

Leaving Mújûr, we passed Kurú *Göl* (dry lake), in a valley, a small village with caves, and beyond it Kurú *Küm* (dry sand), another small village entirely inhabited by *Troglodytes*, and arrived in the evening at Hájî-Bektâsh, a holy spot, situated in a high part of the country, and visible a long way off.

Hájî-Bektâsh is a remarkable example which may be adduced against the constant outcry that taxation is the sole cause of poverty, and of the present ruinous condition of villages and towns in Lesser Asia. Kír-Shehr, which, with its luxuriant gardens, fine soil, abundant water, and warm exposure, might be made a mart for the production of silk, we have seen, is but a wreck. When asked why the town was so prostrate and fallen, the ready answer was, excessive taxation. At Hájî-Bektâsh, no one complained: on the contrary the people boasted of their privileges and prosperity. The tomb of Hájî-Bektâsh, one of the great Turkish Saints, and founder of an order of *Dervîshes*, has saved this *Kaşabah* from taxation; for all its inhabitants are required to pay, is for the support of the tomb; and a portion of the salt-mine of Túz *Köi* is also assigned for the same purpose. Yet notwithstanding these advantages, every other house is, as usual, a ruin. The 'ayán has built himself the only stone house, while the inhabitants, having little to pay, work still less, but sit in listless

\* The *ö* in *köi*, and several other Turkish words, is pronounced like the French *eu*, or German *ö*.—F. S.

groups, sunning themselves and smoking through a day's existence. The whole appearance of the place is that of unproductiveness and idleness. The tomb itself, which it ought to be their pride to have in a good state of repair, is allowed to crumble into ruins.

There is close to this place a high mound, in part composed of loose materials piled up upon strata of red sandstone, and surrounded by a moat or ditch. This mound is called Kará Kavuk (Black Bonnet); and by Rennell is identified with the site of Gadasena, a place anciently renowned for its sanctity, as this place is now (Strabo, p. 537); but we are, from various circumstances, more inclined to place Gadasena at U'ch Ayák.

Hájí Bektásh is situate at an elevation of 3780 feet above the level of the sea; Mount Argæus bearing S.  $52^{\circ}$  E., Hasan Tagh S.  $32^{\circ}$  W. by compass.

8th.—In order to shorten a great bend of the Kizil Irmák, the early part of our route to-day was mountainous, by the conical hills of Aká-juk, composed of quartz resting upon gneiss and mica-schist. On descending upon the plain of the Kizil Irmák, we passed the village of Salándah; and arrived, in time to obtain a meridian altitude of the sun, at this great bend of the river, which has so long led geographers to suppose that there was an eastern and a southern branch of it. It is in  $38^{\circ} 48' N.$

The low country near the river was occupied by sandstone and cretaceous rocks, in nearly horizontal strata. Keeping along its banks, we were ferried over at Yárapasón, where it is about 400 yards in width, but very shallow. Yárapasón at present contains about 300 houses, and is built along the side of a cliff composed of a friable light pink-coloured sandstone, supporting cretaceous limestone. The same cliffs extend in a sort of semi-circle, for nearly a mile, everywhere perforated by caves of various dimensions, a few of which are ornamented with columns and devices, but we found no inscriptions. At the eastern extremity, the rocks have been denuded, leaving the harder and coarser material in the form of numerous cones and heaps, of from 10 to 30 feet in height. Many of these contained also a separate grotto, often sepulchral. Yárapasón appears to be the Osiana of the tables.

In our route to Neú-Shehr (New Town), we passed a ravine still more remarkable for the curious forms in which the same friable rock presented itself. Sometimes truncated cones balanced huge masses of rock upon their points; and at other times they were wrought, apparently by the action of the elements, into fantastic shapes, in which the resemblance of lions, frogs, lizards, and birds, might be traced. As a proof of the near approach to truth exhibited by some of these forms, it may be mentioned that

one of our party was thoroughly impressed with their having been sculptured by the hand of man, and our súrují insisted upon their being the work of a gaur.

9th.—The origin and correct etymology of Neú-Shehr, or Nev-Shehr, has been given by our learned Foreign Secretary, Mr. Renouard, in Mr. W. I. Hamilton's memoir.\* It is a pleasing and cleanly town, situated at the side of a bold ravine, and itself rather darkly backed by high cliffs of volcanic rock. The Greeks, who form a considerable portion of the community here, appear to have congregated into the “new city;” for all the numerous and various troglodyte villages in the neighbourhood, are now, for the most part, as Sátlav, Yárapasón, &c., abandoned by their original occupants. Neú-Shehr contains 2000 houses of Mohammedans, 800 houses of Greeks, 60 houses of Armenians, 2 large jámi's, 1 greek church, 9 kháns, 1 bath, 6 mohammedan schools, and a quadrangular castle, with round towers at the angles. In a commercial point of view, it is, when compared with other towns of the interior of Asia Minor, a very flourishing place. Up the ravine, is the small village of Górah; and downwards, at a short distance, the picturesque troglodyte village of Nár, or the pomegranate. Neú-Shehr is in latitude 38° 37', and at a mean elevation of 3940 feet.

10th.—We had intended making an excursion to Urgúb, to see the curious rocks described on that route by Mr. Hamilton, and earlier travellers, but it snowed all night and all day; bar. 25.510 inches; mean of ther. 42°. As we had now quitted the ancient Morimene and Chammanene, it is important to make one remark upon the hydrography of these provinces. Pliny (lib. vi. c. iii.) mentions the river Cappadox as forming the boundary between Morimene and Galatia. Rennell identifies the Cappadox with the Kardash Cesme (Karindásh Cheshmeh) of Tavernier, on the left bank of the Kízil Irmák. Colonel Leake, and most other geographers, have a large river named Kónák, flowing into the Kízil Irmák, between Kír-Shehr and Cháshnigír Kópri (on the right bank). This does not agree with our observations; for in that interval we met with only two large rivulets, both of which were feeders of the Delíjah Irmák, or Sú (Maddish water), which is a large river on the road from Angora to Yúz-Kát. It appears thus that the Cappadox corresponds with the river of Kír-Shehr, or the Kalichí-sú. There is, however, a river called Kónák, which has its source near Yúz-Kát; and, flowing past Búlák and Imlar, empties itself into the Kízil Irmák, between the parallels of Kaisaríyah and Urgúb.

11th.—Having been detained by continually bad weather, we

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\* Geographical Journal, vol. viii. p. 148.

rejoiced to-day at a little improvement, our next steps taking us to the salt mines, and thence to the lake of Kóch-Hisár. The Shehr-Kyayásí (ketkhodá-sí)\* gave us a little trouble previous to our departure, having asked us for 400 piastres for the delay; also requiring two piastres per hour for horses, the ordinary post price being one piastre; and further asserting, because Mr. Russell had been a little unwell, that we had brought the plague into the town. These matters were not arranged without some discussion with the mutesellim.

12th.—We travelled four hours in a N.N.W. direction, over a plain of volcanic sand, and extended formations of basanites, amid which rose curious denuded hills, to Túz Kój (Salt Ville), near the banks of the Kizil Irmák. Close to this village are the salt-mines, to which the attention of the expedition had been called, as being near Hájí Bektásh. The salt occurs in a powerful bed, the extent of which it was impossible to judge of, as none of the actual shafts go to its floor, although many display its roof. This bed occurs in a stiff yellow clay, sometimes bluish coloured, with abundant crystals of gypsum, which is superimposed upon it in horizontal beds, a little to the east of the mine. There are about seven shafts now open: these are distributed, in a rather curious manner, round the sides of a pit formed by the excavations of former years; and they run in to various depths, from 20 to 100 feet. The salt bed was about 40 feet below the level of the hill; the galleries are carried down at a high angle of inclination; and the salt is taken out in baskets, carried up rude stairs cut out of the clay. There was also a shaft at the bottom of the pit, but it has long ago fallen in, and is now the grand receptacle for rain water. While Mr. Russell and I were at the mines, there came on a severe thunder storm: torrents of water came pouring, in a few minutes, into the pit from several sides at once; the soft clay gave way in large masses, and several slips occurred round the sides of the pit. It appears very likely that works so carelessly carried on, will, some day or other, be overwhelmed all at once.

I shall not venture further here than to state that these salt deposits are evidently of a supracretaceous or tertiary era. The geology of all Garsaura, or Garsauritis, is of a most interesting character; but, notwithstanding the intimate connexion of that branch of knowledge with physical geography—here affecting not only the general features of the country, but also the dwelling-places of its inhabitants—I shall not dwell upon local peculiarities for fear of repetition; but will afterwards, in as brief a *résumé*

\* This Persian word is always shortened into kyayá by the Turks. It signifies “deputy locum tenens.”—F. S.

as possible, endeavour to establish the chief points in the history of these remarkable rocks.

14th.—Our route lay S.W., up the valley of the Túz-Kójí rivulet, containing fresh water, and passing Kizil Kójí, a village of thirty dwellings, chiefly caves; and Chiftlik,\* another small village, in part of caves, in 2 hours we reached Tátlar. This place has been already described by Mr. W. I. Hamilton.† I have only to notice the perfect colouring of the paintings in the cave, where is the old Greek MS.; the existence of a castle, on the top of the cliffs, and a kind of dirt-bed between the sedimentary rocks and the basanites.

From Tátlar our direction lay N. 60° W., over undulating downs of basanitic pebbles. At 4 miles is Chular, a Turkomán village of thirty houses, by side of rivulet; and about 3 miles farther, we entered a rocky pass of sienite, with a poor village. These hills are called Tásh-Teller, and are almost entirely sienitic, with the rocky serrated outline generally peculiar to such formations. We travelled along a wide and monotonous plain, upon which many camels were feeding, extending from the foot of the Tásh-Teller to that of the loftier mountain of Akájík, both of which had furnished us with bearings ever since we reached Kír-Shehr. The same evening we arrived at Sári Karamán, the seat of a vaïvodah, sent hither to govern the Turkomán tribes, and not appointed by themselves. The dogs were very ferocious: one of them tore a large piece out of Mr. Rassám's coat. The people were only a little better.

15th.—Crossing a bridge over the rivulet of Akájík, a gentle ascent led us to Búz-Khur, a village of caves, with ruins of a khán. On our left was the mountain of Kharín; and before us, and extending to the limits of the horizon to the right, a nearly level plain of cultivable and in part cultivated land. At Dómánlí, distant about 3 miles, the face of the country altered; and at Danishmanlí, a village of twenty houses, 2 miles further on, were hills of sienite, rather remarkable, inasmuch as impacted masses of diorite, passing into fine-grained sienite, are distributed throughout the formation, which itself consists of small grains of hornblende, amid large crystals of feldspar. A rocky range of sienite extended hence to A'yánlí, the seat of the A'yán, containing about twenty houses, where we arrived well drenched by the rain, which fell incessantly all the latter part of the journey. Half an hour to the N.E. of A'yánlí are some ruins, and part of a Byzantine church. The natives know no name for the place, save Kilisá, 'the church'; and it is from thence that they draw

\* *Chiftlik* means as much land as can be ploughed by a yoke (chift) of oxen: it is therefore only applied to these caves as habitations.—F. S.

† *Geographical Journal*, vol. viii. p. 147.

the marble columns which decorate their rustic burial-ground. This site appears to be upon the cross-road which led from Parnassus to Archelaüs Colonia, and which in this district, contained the stations of Ozzala, Nitazus, and Ardistana. The direct distance from A'yánlí to Ak-Serái is 30 miles, which approximates to the distance of Ozzala; but, considering the inequalities of the soil, more with Nitazus, the two stations not being very far from one another.

16th.—A fall of snow set in in the evening, and continued till the morning, remaining on the ground and on the hills at A'yánlí, at 3800 feet above the sea. We did not, in consequence start till after 10 A.M. (it was still snowing hard, with a cold northerly wind), over an undulating district of granite and sienite, reaching only the village of Sipáhíler, a term applied in Asia Minor exclusively to horse-soldiers. We were here kindly received by the inhabitants belonging to the Turkomán tribe of Sheraklí, of which we were the more sensible, as we had left the Dómánlí tribe at the last village, on account of the ill-feeling exhibited towards us.

Sipáhíler, a village of about sixteen houses, at an elevation of 3580 feet, is situated at the foot of a range of sienitic hills, which rise about 800 feet above the village. This range is called the Kójah Tágh; and the natives point out three hill-forts upon different rocky summits, which were, however, mere accumulations of stones, without masonry. One of these is called Chákchák Kal'eh-sí, and another Bőilújah Kal'eh.

17th.—From the upland, at the foot of the Kójah Tágh, along which we continued our route this morning, we had a fine prospect of the Kizil Irmák, and were enabled to connect our present journey with the Báránlí Tágh, Kír Shehr, Mújúr, and Hájí Bektásh; the hills above which were all distinctly recognisable. Beyond the village of Demir-lù Kój, and about 7 miles from Sipáhíler, we turned in a south-westerly direction to cross the Kójah Tágh. To our right, or N.W., was a bold rocky granite group, named the Sarú-bulák Tágh, the offsets of which stretched down to the Kizil Irmák, which river separates them from the Báránlí Tágh, itself advancing in a rather remarkable bold and isolated summit, over the Kizil Irmák, which has a very tortuous course from hence to Cheshní Kóprí. The pass over the Kójah Tágh is commanded, although at some distance, by a hill-fort on a high sienitic cone, called Toklú Tal'eh. Soon after descending from this range of hills, the plutonic rocks are succeeded by indurated limestone, in curved and contorted strata; these by grey and brown sandstone, composed of granitic sand and pebbles: and these again by saliferous red sandstone, which alternate with gypsum, and form low hills along the eastern shore of the Great Salt Lake. Passing the village of Turn-ábád, we obtained a meridian obser-

vation in N. lat.  $38^{\circ} 56'$ ; and after a short journey (much delayed, however, by one of our baggage horses failing), over a hilly district, we came to the pass of Kází úyúk, in sandstones and gypsum, and which is defended at its entrance from the west by the castle of Kóch Hisár.

The view of the Great Salt Lake from the entrance of the pass is very beautiful, but it wants wood. Narrow at the north, where it is backed by low hills, it subsequently expands almost beyond the reach of the eye; is next lost behind the hills of Injeh Búrnú, a small cape to the S. W., and then re-appears to the south as a wide and distant expanse of water, backed by lofty summits, which are, however, in reality at a great distance beyond the extremity of the lake.

18th.—In the sheltered and sunny exposure of Kóch Hisár, many flowering plants welcomed us at once to spring. The castle, from whence this place derives its name signifying "Ram Castle," occupies the top of a hill, which is nearly isolated from the remainder of the range, and commands, according to ancient ideas, the town and the entrance to the pass of Kází-úyúk. The foundations of the castle are now difficult to trace, and occupy an oblong space, 282 feet in length by 150 feet in width. The loose stones are piled up within this space into so many sheep and goat folds, whence its modern name. The present village of Kaşabah contains 130 houses, but no resident Christians. Here are salt-petre works. A mer. obs. gave its latitude in  $38^{\circ} 55' 50''$  N.; approx. elev. 2856 feet. The information we obtained regarding the value of the salt lake was pretty nearly the same as is given by Mr. W. I. Hamilton.\* A portion is said still to be claimed by Ahmed Beg, son of Chapwán O'ghlú; and Hájí 'Alí Páshá deputes the Mutesellim of Ak-Seráï to receive the revenue.

19th.—We bent our steps towards the northern end of the lake, our route lying near its shores, along a level plain, bordered to the right by a long range of low hills, at first of red and brown sandstone, then capped by gypsum, at length entirely supplanted by the latter deposit, which extends to the extreme northern end, where the hills terminate in a plain bounded to the north by the Páshá Tágh. This last chain, noticed in Mr. Hamilton's memoranda, is, as that traveller suggested, composed of red sandstone, supporting cretaceous marl and gypsum. It does not rise more than 800 feet above the lake. The weather being fine, we obtained a good mer. alt. of the sun, which gave, for the most northerly point of the lake,  $39^{\circ} 7' 30''$  N.; bar. 27.142; alt. ther.  $65^{\circ}$ .

Passing by Arghun Kói, a deserted village, with bad water, we travelled in a westerly direction over hills of cretaceous lime-

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\* Geographical Journal, vol. viii. p. 147

stone, covered by limestone breccia, affording a scanty pasture to large herds of camels, and food for flocks of small bustards. We were approaching Karájah Tágh, from the southward: a small lake of fresh water was to our right, and a more fertile plain was occupied by several encampments of Kurds, with their flocks; in the midst of which was the large village of Kulú Kői, containing upwards of 100 houses, only lately garrisoned by the cavalry of Hájí 'Alí Páshá, who had obtained from the Kurds much stolen property, taken with them on their journey northwards towards Hái'mánel, on leaving the vicinity of Kóniyah. We had travelled 12 hours from Kóch Hisár; and Kulú Kői was 9 hours from Kizil-jah Kal'eh: the district is called Koreish Kazálik.

20th.—From Kulú Kői we were enabled to follow a more southerly direction, and to approach the shores of the Salt Lake, of which it was our chief object to recognise the form and direction as much as possible: 3 miles S. 30° W. from Kulú Kői is a hill or mound with a moat, called Ba'l-chah-Hisár. The country around undulates gently; the soil is cretaceous; and having many springs, is covered with grass, in consequence of which the tents of Kurds are to be seen in every direction. Out of this district rises a nearly isolated hill of a long form, about 800 feet above the level of the lake, and formed of basanite, supporting limestone. It is called Tavshán Tághí (Hare-Mount). Beyond this is a small lake, which, by a mer. alt. of the sun, taken on its northern limits, is in 38° 48' 45" N. It is called Képek Gól (Dog-Lake). The soil now became covered with mesembryanthemum and artemisia. We passed another salt-marsh, nearly dried up, and reached In-Aví, a large village, on the side of a valley containing a stream of fresh water flowing into the lake, the western limits of which we had been skirting all day.

21st.—From In-Aví our route lay in an easterly direction along the valley of the rivulet; marshy, with abundance of plover and water-birds, amid which were flocks of herons. At a distance of about 6 miles, having left the valley and turned over a plain of gypsum, in part cultivated, we came to a lake called Murád Sóhó Gólí,\* about 8 miles in length by 4 in width. The shores of this lake, at its northern end, unlike the Great Salt Lake, were steep, the waters having exposed beds of gypsum beneath the superincumbent lacustrine deposits. To the west of this lake were some remarkable hills of volcanic rock, which had constituted useful points for bearings from Kóch Hisár, and all along the northern and western sides of the lake. The first of these was called Bóz Tágh (Ice-Mount), a more or less rounded hill,

\* This is evidently a misnomer. Perhaps it should be Morád Sú Gólú (Morád-River Lake).—F. S.

immediately south of In-Aví, composed of basanite covering indurated limestone : the second was an isolated mass of basanite, of remarkable appearance, as it rises out of a level plain of lacustrine deposits. It is called Kará Tepeh (Black-Hill) ; and there are said to be ruins upon it. The two others similarly circumstanced : one of them is a double hill ; the other a low conical volcanic mound.

Continuing along the banks of the Murád Sóhó Gólí, where the plains were very flowery, and where we obtained two species of jerboa, besides a beautiful phalaropus, we came to a river flowing north into the great Salt Lake. This river had its origin in an extensive adjacent marsh to the south, part of the waters of which flow into the Murád Sóhó Gólí, and part to the Kóch Hisár lake. At this point is a very antique aqueduct, the masonry of which is completely hid by a thick incrustation of travertino, deposited, as on the aqueduct of Daphne, near Antioch, by the waters trickling from the artificial canal. This duct, which crossed the river just noticed, is called from that circumstance Kayá Bógház (Cliff-Passage).

Nine miles from hence, continuing in a S. S. E. direction, along an almost perfect level, we passed Túsun U'yúk (Peace-Mound), an artificial mound, that once supported a large edifice ; the ruins of a former considerable town are almost circularly disposed around this central mound. These ruins are now, with the exception of a few fragments of columns, level with the ground ; so we discovered nothing of interest, nor any inscriptions : by position, however, the site may, with every probability, be connected with Congusta or Congustus of the tables : 4 or 5 miles from this, travelling over a marsh, which was in part crossed by a stone causeway, we arrived at the Kasabah of Iskíl, built upon the same great level ground ; but as the lake contains no coralliferous or molluscous animals, it would be difficult to say positively, if it were not for the nature of the soil and the configuration of the land, that this great plain south of the lake has been formed by the gradual diminution of the waters of the latter.

Iskíl contains about 400 houses of Mohammedans. The houses are much scattered, the streets consequently wide ; there is no daily market, and a general appearance of neglect, as if the town belonged to the shepherds of the large flocks which pasture over the lacustrine plain, who have no villages to seek refuge in, but now and then distant enclosures, like cárvánséráis, for the cattle.

We made but a short journey over the same plain to Sultán Khán. About 4 miles from Iskíl we found some interesting ruins (U'yúk Bowát), consisting of a mound 60 feet high, for the

most part artificial, numerous Byzantine remnants in a very broken condition, and some antique grottoes in cretaceous marl, here covered by limestone conglomerates. A modern mesjid, built chiefly of the hewn stone fragments of former edifices, had succeeded to older ruins, but was itself now also a ruin. Close by the town, which may probably be the Perta or Petra of the Itineraries (found also in Ptolemy), there flowed a fine stream of water, which lost itself in marshes immediately beyond it. These marshes form in the line we were now taking, the south-westerly limit of the lake; but they are so far dried up in autumn as to allow of a cross road from Iskil to Ak-Seráï.

Sultán Khán (the Sultan's khán), is about 10 miles from Iskil; and by the sun's mer. in  $38^{\circ} 15' N.$  It is so named from a khán or cárvánséráï which adorns this otherwise poverty-stricken village. This khán is divided into two parts, the more easterly is not very lofty but wide, and ornamented by a gateway of rich Saracenic workmanship. This portion is 70 yards long by 64 in width; the westerly part is in a better state of repair, and is very lofty. It is 61 yards long, by 42 in width. I annex a translation of its Arabic inscription by Mr. Rassám:—

“The exalted Sultán 'Aláu-d-dín, great king of kings, master of the necks of nations, lord of the kings of Arabia and Persia, sultán of the territories of God, guardian of the servants of God; 'Aláu-dunyá wa-d-dín, Abú-l Fat-h, commander of the faithful, ordered the building of this blessed khán, in the month of Rejeb, in the year 662” (A.D. 1264).\*

23rd.—In pursuing our road from Sultán Khán to Ak-Seráï, in an E.N.E. direction, we had at starting to go round the sources of a rivulet originating from six different springs, and thence continued our progress over a marshy land. All that part of the plain which extends between the lake and the gradual rise of land towards the foot of the Hasan Tágh, is lower than the more continuous and extensive portion of the same plain, lying between the lake and the Karájah Tágh. The plain we were now traversing is diversified by two ruined kháns, a long causeway of stone, and numerous wells approached by paved roads upon an inclined

\* Not the Khalif, but one of the Seljukian Sultáns of Kóniyah. The princes of that dynasty adopted many of the titles here given, as may be seen on their coins in Adler (*Museum Cufico-Borgianum*, vol. ii. p. 72) and Marsden (*Numismatica Orientalia*); and they probably assumed the title of “Commander of the Faithful” (*Amiru-í-Múminín*) after the extinction of the chalifite, on the murder of Mostásim bi-Uah, by order of Hulákú, A.H. 656 (A.D. 1258): so that according to the date here given, could we trust the historian Ahmed el Dimeshki, quoted by Adler (p. 74), the prince here named was eldest son and successor of Ghayyáthu-d-dín, the tenth sultan of Kóniyah, who died A. H. 654; but other historians give no such successor to that sultán; and according to Adler, El Dimeshki's statement is disproved by coins still extant: few parts of Asiatic history are, indeed, more in want of elucidation than the chronology of the Seljukian Sultáns of Rúm.—F. S.

plane. At  $3\frac{1}{2}$  miles from Ak-Seräi we crossed the river of Ulur Irmäk by a stone bridge: it flows into the Bayáz Sú or river of Ak-Seräi, a few miles below.

Before we leave the region of the Salt Lake and enter upon the rocky districts of Garsauritis, it may be allowable to make one or two brief observations. The Palus Tattæus of the ancients is called at the present day, by those resident in the neighbourhood, Túz Chólí (the Salt-Desert), as it is almost entirely dry in summer; but it also sometimes called Túz Gólí (the Salt Lake), Ají Gól (Bitter Lake), or Kóch Hisár Gólí (Lake of Kóch Hisár), Túzlah (Saltern, or Salt-Work) : Memlihah and Melláhah in Arabic, signify the same thing.

The eastern banks of the lake are tenanted by pastoral Turkománs of quiet habits, but the western side is inhabited by Kurds, who are constantly giving trouble to the government by their predatory habits. It was most likely, on this account, that Mr. W. I. Hamilton could not find any one to take him to the lake from Afiyún Kará-Hisár, Ak-Shehr, I'lghún, or even Kóniyah; for fresh water, according to every report, is never wanting to the west of the lake. We met with the same difficulty on approaching the lake from the N.W.; but once on its banks, we were resolute in following the yet unexplored western line, in doing which we approached near to the southern declivities of Karájah Tágh, the northern front of which we had also visited in our excursion through Háimáneh. There was, therefore, no real difficulty in completing the north and south lines through this part of central Asia Minor, as the distance previously unexplored required only a journey of 4 hours.

The lake which, as before mentioned, is almost dried up in summer, was nearly at its greatest extent at the period of our visit, and consequently well adapted for an exploratory reconnaissance. To the N., N.E., and N.W., where it receives no large tributaries, it is entirely dry in summer, and its limits are well defined by the absence of vegetation, and the coating of salt and mud; but in its south-western and southern limits, where it receives several large streams of fresh water, which are marked on the map, the plain being, as has been mentioned, very level, far beyond the limits of the lake, the tributary waters spread themselves out and convert the whole land into extensive marshes; so that, between marsh in winter, and salt desert in summer, it is difficult to find out what may be considered as the southern boundary. But as the line of our route extended to pretty nearly the point where all the southerly rivers, except the Bayáz Sú, spread out into marshes, and that line is again connected with Kóch-Hisár, by the labours of Mr. W. I. Hamilton, as good an idea of the real extent of a lake constantly varying in the details

of its form, may be obtained, as if its exact limits to the south had been astronomically fixed.

A series of barometrical observations gave for the mean height of the lake above the sea, 2500 ft. The elevation of many places around not also much exceeding it: Kóch-Hisár, 2836 ft.; Kólú-Kói, 2856; U'zúnler, 2778. In Áví, 2924 ft.; Sultán Khán, 2908.

The lake contains no fish, nor mulluscous or conchiferous animals; its waters and its banks are therefore frequented by few aquatic birds. Although constantly on the look out, we cannot say that we ever saw one bird on its bosom, though the story of birds not being able to dip their wings in the water, is evidently fabulous. The state of its saturation is, however, very great, for salt is collected at almost all seasons from the bottom of the lake, and washed in its water without any sensible loss by the process.

24th.—Ak-Seräi has been fixed by Mr. W. I. Hamilton in  $38^{\circ} 20'$  N. lat. The weather did not allow of our taking any observations there. The town contains 800 Mohammedan, and 10 Armenian houses. It derives its chief interest from its numerous Saracenic remains, some of which are of great beauty. It was evidently a considerable town, and a place of opulence under the Arabs, probably at the time when so much care was bestowed upon the great road passing by Sultán Khán, no doubt a continuation or branch of that given by Idrisi, as the high road from Baghdád through Malátiyah to Kaişaríyah, thence to Kóniyah. Ak-Seräi is also supposed to be a more ancient site, and has been identified with Archelais, or Archelais Colonia, a colony of the Emperor Claudius, which, in the Antonine Itinerary, is placed at 149 m.p. from Ancyra; and in that to Jerusalem, at 162. The known latitudes of Ancyra and of Ak-Seräi, make the actual distance correspond most nearly with that given by the Jerusalem Itinerary.

The greatest difficulty connected with this question is, that Pliny (lib. vi. c. 3.) places Archelais upon the Halys, in consequence of which, supposing that the river of Ak-Seräi might have once flowed through the lake into the Halys, we particularly examined its northern limits in order to determine that point, and can safely affirm that there does not appear to have been any probability, even if the level of the lake were much higher than at present, of there ever having been a communication between it and the Halys. The insulation of the Bayáz Sú, and the non-existence of "a southern branch of the Halys," are important facts in the geography of Asia Minor.

The next object, which we proposed to ourselves on leaving the great Salt Lake, was to follow in part the great road from Phrygia, through Lycaonia, by the capital of Cappadocia; and it is to be

remarked, that in discussing the route in the Theodosian table from Amorium to Tyana, all commentators have agreed in supposing it made a bend to the south, for had it been straight, it would have passed through Archelais; but, as it is, Rennell brings it 13 miles to the southward of it, and Col. Leake follows a similar line. The position of the ruined towns, which we were led to believe might have been the sites of Congustus and Perta, left us only in doubt as to the continuation of the road to the south of Hasan Tágh, in the line of the present road from Sultán Khán; but by taking the cross road given by Strabo, from Ephesus to Tomisa, into the account, and considering that the two, which must have crossed each other, probably met also in one or more sites common to both; and those sites, the Garsabora of the Tables, and Garsaura of Strabo, and the Coropassus of the Tables, and Nazianzus of the Anton. Itinerary, are to be sought for in the aggregation of mines and early Christian remains, existing in the secluded valleys and rocky ravines at the north-eastern foot of Hasan Tágh, where Mr. Hamilton visited Víráñ-Shehr—we now went in search of these, Gelvedereh, Belistermah, and Sevrí-Hísár.

The hills above Ak-Seráï are composed of red and brown sandstone, with gypsum; but in continuing up the course of the Bayáz Sú, these are soon succeeded by volcanic rocks and sand, which give a new feature to the aspect of the country. Level uplands terminate in abrupt cliffs over deep ravines, with shingly and sandy declivities which are generally covered with the ruins of rocks fallen from above.

Some villages, as Demirjí Kói and Selmádár, the houses of which are a mere aggregation of loose stones, are so curiously placed, under such circumstances, on the declivity of hills amid fallen rocks, that at a little distance it is difficult to distinguish the one from the other. After a ride of six hours in a S.E. direction, through a country of this description, we approached Gelvedereh by a narrow valley, the cliffs on each side of which are burrowed by grottoes, often variously ornamented; and the bottom of the valley is full of ruins. The modern village of Gelvedereh is exactly in a similar position, only that the inhabitants appear to have kept recoiling from the more open ravines into the more unapproachable recesses that a number of these offered to their choice. At this point they have built themselves a handsome new church; and the caves and grottoes, which continue without interruption for a distance of from one to two miles on the approach to the village, are here fronted up with stone-work, so that the houses rise in terraces, one above the other, and occupy the head of two separate ravines. The grottoes are similar to those met with in other places, as Yárápasón, Tátlar, &c., but rather more ornamental. We did not perceive any ruins indica-

tive of so great antiquity as those found by Mr. Hamilton at the neighbouring site of Virán-Shehr, 3 hours from hence, S.W. The first site entered upon in this day's ride is at present called Belistermah.

Leaving Gelvedereh, we ascended, in a storm of wind and rain, the rude rocks of Sevrí Hisar, near the crest of which is a curious conical hill, bearing the ruins of an ancient edifice—whence the name of the mountain. Below this are cliffs of sand and tufa, with a few caves and a small Greek village, bearing the same name as the mountain. From this valley we gained another, more isolated, and surrounded by barren, rocky, volcanic hills, in the midst of which are the ruins of a pretty modern Greek church. Our guide did not know the way over the district we had now entered upon, and we were not long in losing our track, which we did not regain till, after travelling 2½ hours, we came upon hills which commanded the great plain of Mál ákób.\* We had previously been passing through ravines, and amid hills generally covered with wood, and composed of tufa, conglomerate, and obsidian. It rained incessantly as we travelled over the plain, which is cultivated, and abounds with villages, but is ill supplied with water, being at an elevation of 4138 ft. In the centre is the large village of Mál ákób, another curious Greek colony or congregation; it contains 200 houses of Greeks, and 70 of Mohammedans. The men trade at Constantinople, the women cultivate their gardens. Their dress is peculiar. Water is obtained with labour from deep wells, of which there are several, surrounded by stone enclosures, each of which belongs to a different family. There is one modern church, in part built of the ruins of an older edifice, and dedicated to St. Theodore; another in ruins, dedicated to St. Michael; and a pretty chapel, in the same condition, to "All Souls." There are also fragments of another church, where we copied from an altar-piece, the only distinct and consecutive letters which bore any appearance of antiquity—

ΑΧΑΙΘΕΑΧΑΤΩΒ  
ΠΑΤΡΙΑΤΑΘΩ

The houses are all built upon the same plan, the frame-work being formed by three or four well-turned semicircular arches, and the interval filled up with rubble and masonry. They are mostly excavated from the mountain to keep off the summer heats. The village is built upon a level plain of volcanic sand, which in summer is drifted about by every breeze, to the great inconvenience of the inhabitants, who also, to protect their cattle and

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\* An Armenian name: Mál-A'kób, for Már-Yákób: St. James—F. S.

fodder, have paved circular spaces in front of their houses, giving to the place a cleanly appearance. The gardens are at the foot of some hills about 2 miles N.E. of the village, where there is also a dome-shaped mountain, called Chevrí, upon the summit of which an annual festival is kept at Easter.

Passing over the Chevrí hills, we came, after a  $1\frac{1}{4}$  hour's ride N.E., to Kaïşar Kóï, a village with a ruined church, a rather pretty kárvánserâi, and other relics of former times. It has now only five houses belonging to Greeks, and about 20 to Mohammedans. By its name and position, this place might be identified with Dio-Cæsarea. Three miles to the right is a conical hill, bearing the ruins of a church or monastery, called Charink Kilisá.\* About 5 miles from Kaïşar Kóï, passing the ruins of a small Greek village, with remains of a church, a few caves and houses with pavements in front of them, we descended in a southerly direction, by a picturesque pass, into the valley of Só-wánlí † Dereh, described by Mr. W. I. Hamilton, as Soandum. The pass we descended by, was hewn out of the solid rock, below which the valley opened most picturesquely before us; and it is, as Mr. Hamilton observes, a truly remarkable place. The cliffs at the head of the valley are not above 60 or 80 ft. high, and the declivities below, about 100 ft.; but both become loftier farther down. The valley follows a rather winding direction; and throughout its whole length, from the top to the base of the hill of Cybistra, are caves or grottoes more or less numerous. Tired with a continued rain and a drenching every day, we stopped at O'rtah Kóï (Mid-ville), a cleanly Greek village near the middle of the valley.

The morning of our arrival at Kará-Hisár † was fine, and a meridian altitude of the sun gave for its position  $38^{\circ} 21' 20''$ . Soon after our arrival, Mr. Russell and I started for Zingibár Castle. It rained all the evening, and also while we were taking the measurements, which occupied no small time in so large and so irregular a building; but we were anxious to compare it with the details of the ancient accounts of Cybistra and Nora.

The castle of Kará-Hisár, or of Zingibár, one of the most remarkable ruins in these districts, stands on the loftiest of two volcanic cones belonging to a hill which forms nearly the most southern point of a low range, extending northwards to Injeh-Sú, and southwards in low hills towards 'Alí Tágh. These hills are merely detached from the central upland of Garsauritis, and cannot be said, as Rennell supposed (No. 2, pp. 172, 194), to

\* For Chiring Kilisá, *i. e.* Bell-Church.—F. S.

† For Sóghán, Onion-Ville.—F. S.

‡ Devehli Kará Hisár; *i. e.* Camel Black Castle.—F. S.

connect the Lycaonian hills (Karájah Tágh) with Anti-Taurus ('Alí Tágh), or to be a continuation of the Lycaonian hills eastwards, and of Anti-Taurus westwards.

Cybistra has been identified by Col. Leake and others with Kará Hisár, but by Rennell with a place called Costere.\* It is chiefly remarkable on account of its having been the military station of Cicero, while watching the motions of the Parthian army, which threatened Cilicia and Cappadocia from the side of Syria. Strabo places Cybistra 300 stadia from Caesarea, this, upon the scale proposed by Colonel Leake,† would amount to about  $34\frac{1}{4}$  British miles. There is some difficulty in ascertaining what distance is meant in the Theodosian Tables: but this would correspond very well. The distance of Kará-Hisár from Caesarea by the Injeh Szú (Sadacora), being estimated at 12 hours or 36 British miles.

The castle of Nora or Neroassus, appears on a variety of grounds, to be the same as Cybistra. Plutarch describes it as situated on the confines of Cappadocia and Lycaonia, while Rennell objects that this castle is not on the common boundary of the provinces, because the district of Tyana intervenes, which is not the case, the district of Tyana being altogether to the south of Kara-Hisár. Rennell says it consisted of distinct forts near each other, but Plutarch only mentions the great inconvenience to the garrison, from the narrowness of the space in which they were confined, enclosed as it was with small houses. Diodorus (lib. xviii. c. 41 Ed. Wesseling) describes it also as a single castle, situate on a high rock and very strong. Plutarch gives to it a circuit of not more than 2 furlongs (440 yards) according to the translators, 250 paces. And Diodorus says, only 2 stadia, or 404 British yards, in circumference. The superficial content of the interior castle, reduced to a figure of an equal periphery, is 11 British yards. The plan generally agrees with Plutarch's description, but is so heterogenous, that it is to be regretted that it is lost with the others.

It is to be remarked that this castle commanded the pass by which the great road from Caesarea led by Soandum, to Iconium, as also that which continued southward to Tyana and Cilicia.

On leaving Garsauritis for the district of Caesarea, the country is too interesting, and has been too little the object of recent descriptions to be passed without remark. Garsauritis is to be viewed as eminently a rocky country; Morimene has ranges of mountains; Central Cappadocia is similarly situated, as is also Melitene; but Garsauritis is remarkable for its wild and stony

\* Kóstereh or Gísterel.—*Jeh. Numá.* p. 620.

† *Journal*, vol. ix. p. i.

districts, secluded glens and ravines, and often picturesque outline; but it has also fertile plains and still more productive declivities. Wood is generally wanting: there is some on the Sevrí-Hışár hills, but for fuel, dry dung, charcoal, and the roots of *astragalus tragacanthus* are generally used. Whether grants were made in modern times to the Greeks of this unpromising land, to render it tributary to their industry, whether by apprehension or a morose love of seclusion, they willingly retired to the rocks and caves of this singular country, or whether they have remained around the ancient abodes of their forefathers, the present servile and ignorant race can tell you nothing. Marrying early, the men repair to Constantinople and Smyrna to trade, while to the women is left the care of the house, the flock, and the vineyard: an evil follows from this which once attracted the legislative attention of Lycurgus; the females become masculine and full of violent passions, and when the men return to their homes, they are often very far from finding an echo to the subdued tones and more polished manners which they had learnt to appreciate in the civilised world. The priests who remain at home, might be supposed to have some influence, but they are often old and unseemly and even sometimes disrespected.

Garsaura, or Garsauritis, it is well known, formed one of the divisions of Cappadocia, and was bounded to the south by Tyanitis and Lycaonia; to the west by Phrygia (Pliny, lib. vi. c. 3), and the district of Tatta palus, or the Tattæan marsh (Strabo, p. 568) which lay along the common boundary of Phrygia, Galatia, and Cappadocia (Rennell, vol. ii. p. 157); to the north by the Halys and Morimene, and to the east by the district of Argæus and the Cappadocian Cilicia. It thus constitutes a separate district, equally remarkable with respect to its natural features and its remains of art, its configuration, its structure, its ruins, its caves, and its population.

The north eastern part of Garsauritis is particularly characterised by its conical volcanic mountains, its streams of lava, and basanitic cliffs, but above all, by its naked volcanic tufa and tephrite rent into deep and narrow glens, studded with cones and pinnacles, also the effect of disintegration, and often presenting an infinite variety of singular forms; and lastly, cliffs and precipices excavated almost wherever such present themselves, with vast multitudes of grottoes that have served, or serve still, for dwellings, churches, chapels, monasteries, or tombs.

The N.W. portion of Garsauritis derives its features, which are less singular and of a more inhospitable character, from a long range of sienitic mountains; rocky and picturesque in the Tâsh Teller; undulating in the Sârî Karamân; stony and wild, again,

at Chámúrlí; bold but rocky, with castellated remains in the Kójah Tágh; abrupt and truncated cones at Tóklú Kal'eh; grouped and mountainous in the Sári-búlák Tágh, and there the sienites meet the mountains of Morimene (Báránlí Tágh) and enclose the Kizil Irmálik, or Halys, in deep and narrow valleys and ravines.

Central Garsauritis is characterised by the Aká-juķ mountain, a tame saddle back, not very lofty, but visible from all Morimene. Connected with it are many offsets, in the deep valleys of which are the lakes called Delvehlí, Tursupú, and others. This district is tenanted by the Akájuķ Kurds, who possess a tolerable reputation for good behaviour.

The Tattrea or Tatta Palus, is acknowledged to have been in ancient Phrygia (Strabo, p. 568), extending through the south-eastern part to Taurus, that is the plain of Perta, extending to Karájah and Hasan Tágh, was considered as bounding, as well as its northern part, on Galatia, and formed part of the kingdom made up by Antony for Amyntas. The S.W. quarter of Garsauritis, as thus limited, is pre-eminently distinguished from the other quarters by the lofty summit of Hasan Tágh, rising upwards of 8000 feet above the level of the sea. This mountain has a nearly conical form, and is said to preserve patches of snow throughout the year. Its north-western base is bounded by the plain of the lake; to the S.W. a low undulating country connects it with the Karájah Tágh, while to the E. it is prolonged by one or two cones, and then a lofty chain of hills, which shut up Garsauritis to the S., but do not extend as far as that part of Taurus called 'Alí Tágh, and from which they are separated by the uneven territory of Tyanitis.

Hasan Tágh is in every direction a picturesque and striking mountain, but there is still more interest connected with the curious glens and rocky ravines at its base, than with its own acclivities or heights. Of volcanic origin, excepting the sandstone and gypsum deposits of Ak-Serái, almost immediately succeeded by trachytes to the east, it has spread over the whole country a considerable, although local formation of trachyte, claystone, and clinkstone,\* which generally reposes upon tufa or tephrite.

These rocks influence the configuration of the whole of the south-western quarter; the compact uniform products of effusion, are spread as it were, in vast beds over the rocks of aggregation, giving rise to plains or slightly undulating lands, with sometimes stair-like terraces; but where there is water, as along the courses of rivers, the detrital rocks of a friable nature are carried away,

\* Although I use trachyte, claystone, &c., I am far from admitting the correctness of these terms.

while the more compact rocks are tumbled down, leaving vertical cliffs above and acclivities of sand below, with scattered masses of rock, amid which the habitations of men are so intermingled, that it is sometime before the traveller can distinguish them from the ruins of the cliff. The face of the rock above, as well as the declivities of sand below, when not covered with fragments, are in many places studded with numerous grottoes.

On approaching the foot of Hasan Tágh and the head of the waters, the tributary streams are more numerous, and the ravines in consequence more frequent, sometimes as many as three or four are to be observed meeting at short distances, and all with excavated cliffs and innumerable nest-like mansions of the living and the dead.

But at other times lavas (tephrines) mingle themselves with domites, leucostimes, basanites, and basanitic conglomerates, forming ranges of hills as in Sevrí-Hisár: and then again, the rude domites advance upon the lower territory in naked rocky masses like a true granitic country, surrounding little isolated basins amid which are again found the ruins of habitations, and of stone churches, belonging to the same race of men.

The modern Greeks are not, however, confined to these wild spots, so difficult of access and so rarely inviting to the eye. The small town of Mál A'kób has been described as situated in the midst of a fertile plain—Kaiṣar Kój or Dio-Cæsarea is again in a rocky district. The south-eastern quarter of Garsauritis partakes indeed of both features, grassy uplands with tepehs or solitary hills, sometimes with old churches on their summits, as at Charink-Kilisá, and cultivated plains, with little water or wood, out of which also rise bold, rounded, and naked hills of lucostine, like the phonolitic domes in Scotland and France, and the seat of superstition, as in the Chevrí and other hills; and lastly, on the confines of the district, we find at Sówánlí Dereh and places adjacent to it, the same deep cut valleys with the same repetition of cliff and cave scenery as awaken the traveller's interest and fix his attention in the northern and southern portions of this very remarkable district.

28th.—We started along the plain of Kará-Hisár,\* where vegetation and scenery were both monotonous. The rivulet of Kará-Hisár flows onwards in winter, as it did at the present moment, to the most southerly of the lakes that occupy the plain of Kará-Hisár, which become mere marshes in summer. At that time the quantity of water brought down from the Sówánlí Dereh by Kará-Hisár is so small as scarcely to suffice for the

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\* Devehlí Kará Hisár.—J. N., p. 620.

purposes of irrigation. The plain of Kará-Hisár, according to our barometers, has an elevation of 3420 feet, and does not send out a stream in any direction. A range of hills stretched along our left, in a direction N.N.E. At their foot were caves with ruins of a Christian village. On the plain, 3 hours from Kará-Hisár, there is a ruinous khán. The foot of Arjish Tágh had hitherto been occupied by hills of volcanic sand, tufa, and conglomerate, which terminated in a well-defined line on the plain; but immediately beyond what is now the northern lake, a considerable stream of basanitic lava had flowed between hills of sand, &c., expanding towards the base of the mountain, and advancing upon the plain in a northerly direction, extending to the limits of the Great Sázlik or Marsh, beyond Injeh Sú. The low cliffs formed by these scoriaceous and lava-basanites are partitioned out by the industrious Christians for the cultivation of the yellow berry (*Rhamnus infectarius*).

Injeh Sú (Slender water) is a small town, remarkably situated in a ravine of volcanic conglomerate, which is traversed by the rivulet that gives its name to the town; Injeh Sú (Narrow River), not Injú Sú (Pearl River). The town is shut up at its N.E. extremity by a handsome khán, the walls of which extend from one side of the ravine to the other. The ravine expands at its upper part, and opens into another, having a north-easterly direction. Both the declivities and base are occupied by dwellings: the Mohammedans and Greeks having each about 750 houses. There are also many grottoes. The Christians have two churches, one of which makes a fair appearance on the hill side. The houses are also for the most part good and cleanly. Injeh Sú is governed by a Mutesellim, sent from Constantinople; the produce of the taxes of the town being devoted to the maintenance of the Jámi', called Mahmúdíyah, in the Mohammedan capital. It was indebted also to the Sultán, when Kará Mustafá was Vezír, for its Khán and Jámi'.

29th—Our route to Káisaríyah lay to the E.N.E., along the borders of the Great Sázlik or Marsh, alternately at the foot of black rocks and cliffs of lava, and occasionally by stony unpleasant paths over the same rude material. Mr. W. I. Hamilton has remarked upon the absence of rivulets in the declivities of Arjish, the melted snow being almost immediately absorbed by the porous volcanic rocks, but on this side it reappears in abundant springs, more or less circularly disposed in little rock-enclosed valleys, where they unite, not to form rivulets, but to expand over the great marsh previously alluded to. Beyond these basanitic rocks with frequent springs, we came to a more open valley, everywhere covered with gardens, and making

a short ascent over the side of U'lán-lí mountain, we passed by what was apparently a great subsidence in the rock, called Kurk Kurk; and thence descended upon the plain of Kaïsariyah, passing, before we reached the town, a long peninsulated hill, called Besh Tepeh (Five Hills), at the extremity of which is a ruined castellated enclosure, and upon which is said to have been built a portion of the ancient town of Cæsarea.

*May 1st—8th.*—Kaïsariyah is a town of great antiquity. As Mazaca, it was the capital of Cappadocia, at the time that the Greeks knew it only from the reports of casual travellers. In the time of the early Roman emperors it took the name of Cæsarea, but with the addition of its original name. Being situated at the foot of Mount Argæus, it has also been denominated from that mountain. Its modern name is a mere corruption of the ancient one; at present it is vulgarly abridged into Kaïsar. It appears once to have been a large and populous city. After the captivity of the unfortunate Valerian (immortalised on the rocks of Shápúr), Demosthenes, a Roman, not so much as Gibbon, remarks, by the commission of the emperor, as in the voluntary defence of his country, resisted in Cæsarea the progress of the Persian arms. The town was subjected to a nearly general massacre, and is said at that time to have contained 400,000 inhabitants. The modern city, which is for the most part in a very ruinous condition, contains 12,176 Mohammedans, 5237 Armenians, and 1109 Greeks. Total, 18,522 persons. This was the Ayán's report to Mr. Rassám.

During our stay at Kaïsariyah the weather presented some very fine intervals, which enabled us to obtain a series of Lunar Observations, which gives its longitude  $35^{\circ} 45' E.$  Its latitude by a number of mer. alt. of sun and several stars is  $38^{\circ} 41' 40''$ . We also laid down a plan of the city and of its ruins, which chiefly belong to the Mohammedan era.

The attention of the expedition had been particularly called to the investigation of the hydrography of the immediate neighbourhood of Kaïsariyah: whatever may still be the difficulties that will hang over the statements of the ancients upon this subject, nothing can be more certain than that no rivulet or river flows from that neighbourhood to that called by the Turks Tokhmah Sú, the sources of which, to put the question beyond all doubt, we investigated in a subsequent part of our travels.

There is a rivulet which flows from the northern foot of Arjísh, and which, sweeping round 'Alí Tágh, passes by the populous village of Tágh Kázi, and is thence, at most seasons of the year, lost in irrigation; at others it is a tributary to the Sárimssák. There is also another small tributary to the same river from

Manju-lí. Mr. W. I. Hamilton ascertained, in going round Arjish on the east side, that there are no traces of any stream or waters except such as flow N.W. or S.W. The Sárim-sák river, which we traced nearly to its sources, flows from the village of the same name, in a westerly direction across the great plain of Kaïsariyah, where, at a distance of 2956 yards from the city, it is 8 yards in width by 2 feet in depth. It loses itself in the Sázlik or Great Marsh, where it is said to be joined by the Kará Su, and to flow by Bógház Kóprí to the Kizil Irmák.\* This united stream is what Messrs. Hamilton, Texier and Callier identify with the Melas of Strabo (xii. p. 538), after the submersion of the lands of the Galatians.

The noble mountain of Arjish, the ancient Argæus, vulgarly called Ardish or Arjeh, is now clearly proved to be the loftiest peak in Asia Minor. Almost perpetually involved in clouds, during our stay at Kaïsariyah, we had only an occasional glance of its extreme summit: and the season of the year in which the snow line descends to within a few hundred feet of the plain, put all attempts at an ascent out of the question, even if, after Mr. Hamilton's labours, it had been deemed advisable to incur the delay and expense entailed by such an undertaking. The structure of this fine mountain, which, like Hasan Tágh, is principally of volcanic origin, and belongs to a comparatively modern epoch of activity, will be best described by the before-mentioned traveller; but the whole, in a general point of view, presents an interesting accumulation of conical, rounded, and saddle-backed hills, chiefly composed of grey friable lavas, with a basaltic base. The manner in which these various formations are dispersed about the declivities, is rather remarkable, and always very distinct.

The summit of Arjish bears from the Armenian church in Kaïsariyah S.  $17^{\circ} 30'$  W.; the variation of the compass at the same place was  $10^{\circ} 30'$  westerly, hence the true bearing of the summit is S.  $7^{\circ}$  W. Its summit appears to be about 10 miles from its average base, considering it for the moment to be isolated on every side, which it is not to the S.E. This would give a mean area for the whole mountain of 300 miles, and a circumference of 60. Its elevation, as determined by Mr. Hamilton, is 12,809 feet. The report that both the Euxine and the Mediterranean may be descried from its summit, given by Strabo (p. 538), must be received with caution, since its distance from the Euxine is 170 British miles, and from the Mediterranean 110 geographical

\* Baron Wincke, a Prussian staff officer, who accompanied the unfortunate expedition of Záid Mohammed Páshá, also verified this fact. He further states the marsh to be divided into two distinct parts to the N.

miles, with ridges of high mountains between both. There is also a tradition that the Romans had a castle on its summit, where Tiberius Cæsar used to sit, which is not deserving of attention, except as probably connected with the adjacent summits of 'Alí Tágh or U'lánlí.

The Armenians have preserved a written chronicle of the earthquake that ravaged Kaiṣarīyah in August, 1835; but it contains little that is of any interest to the philosophy of these destructive phenomena. It appears that it commenced two hours before sunrise on the morning of Thursday, August 1st, and was accompanied by a loud noise, the shocks being repeated for as much as ten hours from that time. Many minarets and other lofty buildings were thrown down. The record says that there perished as many as 665 persons. The houses thrown down are mentioned rather hyperbolically as beyond enumeration. Several of the neighbouring villages that were built in ravines of crumbling rock, suffered severely. At Tágh Kazí 17 houses were destroyed by the fall of a rock. At Manjusun, 3 hours to the west, the loss of houses was also great. A catastrophe of a similar kind which occurred at Beli-Yázi has been noticed by Mr. Hamilton. I could obtain no satisfactory account of any well-defined swallowing up or subsidences.

There was some discrepancy in the barometrical results obtained by ourselves and by Mr. Hamilton. Ours gave for the elevation of Kaiṣarīyah above the sea only 3236 feet, Mr. H. placing it at 4200 feet. The boiling point of Robertson's thermometer was 25.8; our barometer stood at 26.314; the thermometer at 59. Cloudy weather.

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ASIA MINOR & ARMENIA,  
to illustrate routes of  
MR. AINSWORTH, MR. BRANT,  
MR. SUTER, &  
LORD POLLINGTON.

1840.

The eastern portion of the Map, from observations by  
M<sup>r</sup>. A. G. Glascott, R. N.







